

The Moravian crossroads.

*Mathematics and mathematicians in Brno between German traditions
and Czech hopes*

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ABSTRACT. In the paper, we study the situation of the mathematical community in Brno, the maintown of Moravia, between 1900 and 1930. During this time, the First World War and, as one of its consequences, the creation of the new independent Czechoslovakia, created a major perturbation and was the occasion of a reorganization of the community. Its German and Czech sides were in particular constantly looking for a renewed cohabitation which proved difficult to establish along the sliding of political power from the Germans to the Czechs. We try to illustrate how before the war the main place for mathematics in Brno was the German Technical University whereas after the war it became the newly created Masaryk university.

1. Introduction

Following the Armistice in November 1918, national borders were drastically redrawn in Europe. New states, such as Poland, Czechoslovakia, and Yugoslavia, emerged and immediately had to situate themselves geopolitically. To the new states, military circumstances dictated a system of alliances with the victors of World War I—mainly Britain, France, Italy, and the United States. Moreover, these alliances were also made necessary by the Allied embargo on German scientists, passionately defended by the French during several years after 1918 despite of the lack of conviction on the Anglo-Saxon side and of the Italian decision of contravene it after the Italian failure at the Peace conference¹. For countries that had hitherto been submitted to German, Austrian, or Russian influence and authority, this led to major cultural realignments. At the local levels, the tense cohabitation between different linguistic, religious, and national communities complicated matters even more. But what effect did this political reshuffling of territories have on mathematics, if any? One way to start examining this question may be to look at correspondences that were established at that time between mathematicians in Allied nations and those who lived in the newly created states of Central Europe.

In 1919, the 40-year-old mathematician Maurice Fréchet (1878–1973) was put in charge of organizing the mathematics departement at the university of Strassbourg in the process of being reestablished as the intellectual showcase of French science in

¹On this question see (among others) [Lehto 1998], [Mc Millan 2001] and [Mazliak & Tazzioli 2010].

the buildings of the German Kaiser–Wilhelm University. On 29 June, he addressed a letter to a colleague of his in Prague, the capital of Czechoslovakia, which had just declared its independence on 29 October, 1918:

Would you allow me to inquire about the universities that will be staying or created on the territory of your new state. Perhaps would one of your students moreover oblige me by sending the list of mathematics professors in Czechoslovakian universities, as well as the list of Czechoslovakian journals publishing original mathematical articles written by your fellow countrymen. Is any of these journals publishing articles in French?²

To whom Fréchet had written is not clear. What we know however is that, some months later, Bohuslav Hostinský (1884–1951), a mathematician and physicist then serving as secretary of Czechoslovakia’s National Provisional Committee, was given Fréchet’s letter. His good knowledge of French was the probable reason for his ending up with the letter [Bru 2003]. The son of the musicologist Otakar Hostinský, a prominent member of the Czech intelligentsia, Bohuslav Hostinský had defended a Ph.D. thesis on Lie spherical geometry in 1906 and then spent the academic year 1908–1909 in Paris where he heard the lectures of Émile Picard, Henri Poincaré, and Gaston Darboux.

On 19 October, 1919, Hostinský his reply to Fréchet. He informed the Strasbourg mathematician that new universities were to be opened in Bratislava and in Brno—the latter to be named Masaryk University after the first president of Czechoslovakia and where he was soon to be appointed as professor of theoretical physics. Hostinský mentioned that both of the major Czech journals, the *Časopis pro pěstování matematiky a fyziky* (Journal for the cultivation of mathematics and physics) and the *Věstník Královské české společnosti nauk* (Bulletin of the Royal Czech Science Society), were about to change their language policy to increase French and English presence at the expense of German. To conclude his letter, Hostinský suggested to Fréchet to be his main contact in Czechoslovakia in case he needed one.

This was the seed of an extensive and mathematically fruitful correspondence between the two mathematicians [Havlová et al. 2005]. Started in the aftermath of WWI, this correspondence, we want to argue, is representative of the way in which the emergence of independent states allowed the development of new cultural and scientific networks. In mathematics, this is particularly significant, as it closed a period of French and German domination. The example of Czechoslovakia is enlightening in that it shows how a national community developed its own local network of scientific institutions and how while it hitherto belonged to the German cultural sphere, this community started to look for more extensive contacts in France.

²*Voulez vous me permettre de vous demander quelles sont les différentes universités qui doivent subsister ou être créées sur le territoire de votre nouvel Etat. Peut-être en outre un de vos étudiants voudrait bien me rendre le service de me communiquer la liste des professeurs de mathématiques des universités tchéco-slovaques, et celles des périodiques tchécoslovaques qui impriment les mémoires originaux de math par vos savants compatriotes. Y a-t-il un de ces périodiques qui soit publié en français?* Hostinský’s personal archives (correspondences with French scientists), Archive of Masaryk University, Brno.

In the following we focus on the mathematical life in Brno, the capital of Moravia, before, during, and after WWI.³ Bordering Austria on the south, Moravia has always been a multicultural region. Due to the presence of a strong German minority, it was one of the parts of Europe where the question of nationalities would be posed with special acuteness in 1918 (see figure ??). This complex cultural cohabitation was reflected in the fact that two distinct mathematical communities lived side by side in the town. The discrepant effects the Great War had on both communities are examined below from an international standpoint.⁴

2. The Czech Fight for Higher Education in Moravia Before WWI

Moravia is an interesting place to study the effect of the postwar cultural reconfigurations on mathematics. The father of Czechoslovakian independence, Tomáš G. Masaryk wrote that in the “so-called ‘German territories’ in Bohemia (Moravia and Silesia) numerous Czechs are living; it is therefore fair that the Czech state should keep them; it would be unfair to sacrifice several hundreds of thousand Czechs to the *furor teutonicus*” [Masaryk 1920]. This annexion was of course the seed of many conflicts to come. As Edvard Beneš, Czechoslovakia’s minister of foreign affairs, explained to the delegates of the Peace Conference in Paris, on 5 February, 1919: “the relations of Czechoslovakia with its neighbours have to be settled in order to avoid any future conflict.”⁵

In Brno the coexistence of the Czech majority with an important German minority was indeed tense. This fact is crucial in order to understand the shape of its educational institutions between *ca.* 1880 and 1930. Although the German minority that had exerted a dominant role in the cultural arena suddenly lost their preeminent place in 1918, their cultural influence remained important. It is in this context that one must interpret efforts at building cultural bridges with Allied powers. Our study emphasizes the fact that may seem obvious at first glance, namely that the history of mathematics in Moravia cannot avoid taking into account the relationship between communities, even if the contours of these communities were never very precise. These contacts were complicated, mixing rivalry and dialogue, and most often reduced to the minimum.⁶

³To simplify, we shall always refer to the city by its Czech name, although when the German community is concerned it obviously should be replaced by Brünn. Similarly, we will throughout write Strasbourg where the Germans would of course have written Straßburg.

⁴Who, in this story, were the “Germans” and who were the “Czechs” is an important but difficult point to consider. During the period we study, the answer to such question was never univocal and constantly changing depending on political and social conditions. In his study on the German minority in Czechoslovakia, Křen has shown the fluctuation in the definition of Germans (and Czechs) [Křen 1998]. In population censuses taken in the years 1880–1900, the numbers of inhabitants of Brno who declared Czech as their main language of communication, varied from 30 to 40 %. In the last census before WWI (1910), 41,000 out of 126,000 Brno inhabitants (32%) declared Czech as their usual language ([Dřímál & Peša 1973], vol. 2, p. 64). These figures must however be considered with care. Political and economical reasons probably led to an overestimation of the German settlement. This can be inferred from the fact that in the very different political context of January 1919, 61% of the (almost identical) population declared to belong to the Czech community.

⁵Quoted from the newspaper *Le Matin*, 6 February 1919.

⁶One may here recall the well-known fact that the coexistence of several cultural communities in Brno of course ended with violence. The German invasion of 1939 was followed by the terrible years of occupation and the general expulsion of German-speaking inhabitants between 1946 and 1948

The first university to be established in Brno was, characteristically, a German institution. Founded in 1873, the Technical University (*Technische Hochschule*) replaced the Polytechnicum established in 1849, itself a distant heir of the old Olomouc Academy (for an overview of the history of Czech mathematics, see [Nový 1996]). The Technical University was divided into faculties and was managed by an elected rector. Though the number of professors increased, the number of students stagnated and the Brno Technical University was, in fact, a small institution [Hellmer 1998]. But this does not mean that positions there were unappealing. Numerous Austrian scientists used to begin their academic career in modest size institutions. As Havránek recalls, the epigrammatic characterization of the professor's career in the Habsburg monarchy might have been: "Sentenced to Czernowitz, pardoned to Graz, promoted to Vienna" ([Havránek 1998], p. 216). Albeit less prestigious than Graz because of what was perceived as the hostile Czech environment, the Brno Technical University was certainly attractive due to its proximity to Vienna.

Since the beginning of the Czech national revival at the end of the 19th century, communities opposed one another on symbolic grounds and in cultural and intellectual life. In the 1860s, students from the Prague Technical University demanded and obtained to be lectured in Czech. In 1869, the Prague Polytechnicum was divided into two separate institutions and so was the venerable Charles University of Prague in 1882. Mathematicians were active in this movement. In 1862, a Czech counterpart to the DMV was founded by students in Prague: the Union of Czech Mathematicians and Physicists (*Jednota českých matematiků a fyziků*). Although the *Jednota* was initially devoted to the improvement of the students' scientific knowledge and lecturing skills without consideration of language or nationality, activists rapidly transformed it into a Czech national organization, isolating Czech students from the German and severing ties with German teachers. The *Jednota* stirred the Czech intelligentsia's national consciousness. Although members of this society were spread over Bohemia and Moravia, official meetings and lectures were all held in Prague until WWI.⁷

Until the 1860s, mathematicians at universities in Prague and Olomouc wrote their theses and scientific production in German whether Czechs or Germans themselves. During national revival, the situation changed: mathematicians split along national affiliations while career prospects started to diverge ([Nový 1961], p. 221). German mathematicians from Czech lands kept tight contacts with mathematicians in Germany and Austria and were considered as German mathematicians in Europe.⁸ They hoped for and often got appointments to more prominent academic centers of the German-speaking world. More isolated, Czech mathematicians had, on the other hand, fewer opportunities for pursuing research. It is no so much that they lacked contact with European mathematicians before the war. After graduation, they often spent a year abroad, in Germany, France or Italy. But, at the end

⁷See details on the Union of Czech mathematicians and physicists in [Seidlerová 1998].

⁸As Seidlerová observes, the situation continued after the independence of Czechoslovakia and even inside the country. She writes: "Even Czech university teachers and researchers often had no idea that in their works they actually cited a colleague from the Brno German Technical University" ([Seidlerová 1998], p. 234). We can also mention the amazing case of Friedrich Urban, a German mathematician in Brno who wrote in 1923 a book about random events in chains (in modern terms, Markov chains) precisely at the time when Hostinský started to be interested in them. Although in Brno at the time, Hostinský learned of it through Fréchet [Havlová et al. 2005].

of 19th century, Czech mathematicians had very small chances of being appointed in Austria or Germany. At most they could hope for a position in one of the two Czech universities in Prague. Back home, they were moreover asked to write textbooks in Czech, not only to university students, but also to secondary school pupils, while German mathematicians wrote textbooks on advanced topics.

Although present everywhere, this conflict took different forms in Bohemia and in Moravia. In Prague, due to the large Czech population, the Germans often experienced cohabitation as a threat. The division of the Prague university in 1882 into different German and Czech entities was a case in point. In 1897 German students, allying themselves with northern and western Bohemian Germans belonging to the movement *Los von Prag* (Out from Prague), tried to move German universities from Prague to Reichenberg (Liberec) [Cohen 2006]. Jaroslav Hašek's famous book *The Good Soldier Švejk* [Hašek 1930] where Austrian militarism and bureaucracy are ridiculed certainly exaggerated the tension at the 20th century. Still, heated debates sometimes pitted academics against each other. In 1907, mocking the requests made by the Prague Czech University to obtain more substantial subsidies, the rector of the (German) Charles University August Sauer for example called the university a "a spoiled child," to which the politically-active physician Otakar Srdínko replied by a small brochure [Srdínko 1908].

Nearer to the border, South Moravia where the German population constituted a significant minority experienced cohabitation differently. Before the foundation of universities in Brno, Czech Moravian students were mostly attracted by Prague and the Germans by Vienna. At the end of the 1880s, out of roughly 1000 Moravians who received a higher education, about 700 went to Vienna, 250 to the Czech University in Prague and 60 to the German University in Prague. By the mid-1890s, the number of Moravian students had increased to *ca.* 1300 and the question of opening a new university in Brno as raised. That in the Habsburg monarchy some towns with much smaller pools of students such as Czernowitz in distant Bukovina possessed a university where less than 300 students were enrolled, was seen as further evidence for the need of establishing a university in Brno ([Jordán 1969], pp. 40 and 43).

The central problem was the teaching language at the new university. Whereas a Czech population of 5 million had only one university to turn to in Prague, 8 million Germans could choose among five universities (Vienna, Prague, Graz, Innsbruck, and Czernowitz). In 1885, noticing that Czech from Moravia and Silesia formed a sizeable part of students enrolled in Austrian universities, Masaryk pleaded for the establishment of a second Czech university ([Masaryk 1885], p. 275). His goal, as he explained later, was to insure a healthy competition and new positions for young Czech professors [Masaryk 1894]. If all young and talented graduates were to be appointed at the only one Czech university that existed, then none other would stand a chance in future decades. By the late 1890s, Masaryk's fear were realized and a large number of privatdozenten at the Czech University in Prague were faced with no professional perspective of being promoted to a professorship.

In 1896, the Imperial government conceded the right to establish a university as well as a new Czech technical university in Moravia. But this seemed like nothing but a formal declaration, as Vienna simultaneously asked both national components first to reach a preliminary agreement about the creation of a new university ([Jordán 1969], pp. 47–48). In 1899, a Czech technical university was

opened in Brno as a counterpart to the German, but projects for establishing a Czech university was met with strong resistance. When Masaryk renewed the call for a Czech university in Brno, prominent members of the German community voiced their worries, especially since they felt that it was the (richer) German community that would have to foot the bill with its own taxes.⁹ They warned that a Czech university would necessarily sink to low a academic standing, since language was a barrier against any attempts at establishing and maintaining contacts with world-leading scientists [Bachmann 1902]. To such fears of “Czechization,” Sauer replied:

where will the students of the university of Brünn [...] find employment if not by occupying position that until today have stayed in the hands of other races, and above all the Germans? [...] If Czechization means that Germans will be expelled from their positions, that Germans will be dominated, that Germans will be oppressed [by the Czechs], then this proud slogan must not be used to establish a second Czech university without our strongest protest against this villainy (quoted in [Srdínko 1908], p. 8).

And so was the matter of a Czech university in Brno put to rest until the outbreak of World War I, despite a new series of petitions presented by Masaryk in 1912 to the Austrian Parliament ([Jordán 1969], p. 105).

3. Mathematics in Brno Before 1914

Let us now paint the picture of mathematics in higher education in Brno between 1880 and 1914. As we have argued the split between communities make it more appropriate to consider successively the case of the German institutions and then that of the Czech.

3.1. German Institutions. At the German Technical University, the chairs (*Lehrstühle*) of mathematics, of descriptive geometry, and of theoretical mechanics changed hands more frequently than in other departments. This may have been the case mainly because mathematicians had more opportunities to find other position, as mathematics was taught both in technical universities and in universities. Mathematicians mostly came to Brno from Graz, Prague, or Vienna where they were born, had relatives and had studied at local universities. Many of them, therefore, used the first opportunity to leave Brno if a chance to go back home presented itself [Šišma 2002].

The first renowned mathematical professor at the Brno Technical University was Emanuel Czuber (1851–1925) who came from the Prague German Technical University in 1886. A Czech from Prague, his original name, Čubr, had been Germanized during his studies at the German Technical University in Prague. He would soon leave Brno for the Vienna Technical University—a fine example of the way in which Brno seemed at the time destined to served as springboard to Vienna [Dolezal 1928].

With Georg Hamel’s (1877–1954) appointment in 1905, a brilliant period for mathematics began at the Brno German Technical University. The 28-year-old had defended a doctoral thesis in Göttingen about Hilbert’s fourth problem and

⁹To this claim, Srdínko replied with anger: “He who wants to turn civilization into an object of trade and offer it only to the rich, behaves as a barbarian” ([Srdínko 1908], p. 9).

then a habilitation in Karlsruhe. Hamel's presence and unprecedented activity, in particular for recruiting first rate collaborators, seems to have given a boost to Brno's mathematical life. The Brno seminar was announced in the *Jahresbericht der Deutschen Mathematiker-Vereinigung*, the journal of the German mathematical society (DMV). In the fall of 1905, a Society for Mathematical Physics (*Mathematisch-Physikalisch Gesellschaft*) was created, an event announced in the JDMV in 1907. Over the next few years the mathematical seminar met every fortnight.¹⁰ The full list of speakers between 1906 and 1913 include besides Hamel himself and his colleague in Brno, Emil Waelsch (1863–1927), Max Ungar, Richard von Mises (in Brno, 1907–1909), Emil Fischer (in Brno, 1902–1910), Ernst Fanta (an actuary from Vienna who gave weekly lecture on his trade in Brno), Hans Hahn, Arthur Haas, Alfred Haar, Gottfried Ruckle, Paul Ehrenfest, Heinrich Tietze (in Brno, 1910–1919), Johann Radon. . . If one compares with similar mathematical seminar at the mathematical society of nearby Vienna, one finds that speakers often overlapped on a given year. Tietze, Lothar Schrutka, von Mises, Hamel went several times to Vienna while they held positions in Brno. But while the Vienna seminar concentrated on strictly mathematical topics, Brno was slightly slanted towards mechanics and mathematical physics (with talks about Planck's results by Hamel, hydrodynamics by von Mises, electromagnetism and gravitation by Jaumann). Personal relationships certainly played a great role in the Brno seminar. Several mathematicians on the list had met as students in Göttingen (Hamel, Fanta and Haar for example). Hahn, Tietze, Ehrenfest and Gustav Herglotz had formed a small inseparable group of students at the Vienna University.¹¹ After Hamel's departure to Aachen in 1912, the life of the Gesellschaft, though less active, was maintained until the beginning of WWI.

3.2. Czech Institutions. At the time of its foundation in 1899, several mathematicians were appointed to the Brno Czech Technical University. Among the first members of faculty we find Karel Zahradník (1848–1916) who became the first rector, Jan Sobotka (1862–1931), the professor of descriptive geometry, and Antonín Sucharda (1854–1907). All had studied in Prague and worked as secondary school teachers at some point in their career. Zahradník came from the university of Zagreb in Croatia where he had remained for more than 20 years. Sobotka and Sucharda, who were younger, had nevertheless travelled, respectively, to Vienna, Zurich, and Breslau, and to Göttingen, Munich, Paris, and Strasbourg. The professor of mechanics was Václav Řehořovský (1849–1911) who had a similar background. As we can see, the foundation of the Czech Technical University in Brno resulted in creating four professorships for the Czech mathematical community.

In the following decade, Sucharda retired and Sobotka left after he obtained a professor at the Prague Czech University where he would end up training the majority of Czech geometers in the first half of 20th century [Urban & Vančura 1962]. In 1906, Matyáš Lerch (1860–1922) was appointed as Sucharda's replacement. In 1908, Miloslav Pelíšek (1855–1940) was named professor of descriptive geometry in

¹⁰See *Jahresbericht der deutschen Mathematiker-Vereinigung*, vol. 16, 1907, pp. 396–397; vol. 18, 1909, pp. 104–105; vol. 21, 1912, pp. 58–59; vol. 23, 1914, pp. 52–53.

¹¹Details about Herglotz and Ehrenfest can be found in an interesting article [Huijnen & Kox 2007] describing the context of the talk delivered by Ehrenfest in Brno in February 1912, when after having decided to leave St. Petersburg he was on the look for a permanent position in another European university.

Sobotka's place ([**Franěk 1969**], vol. 1, pp. 233–240). A brilliant number theorist, Lerch was already a tenured professor at the University of Fribourg, Switzerland, since 1896. Lerch had studied mathematics in Prague where he worked as Eduard Weyr's assistant in 1885. He habilitated at the Prague Technical University in 1886 and during the next ten years published more than one hundred mathematical articles [**Frank 1953**]. While in Fribourg Lerch had tried, without success, to get a position at the Prague Czech University after the deaths of Studnička and Weyr. In 1906, Lerch was finally appointed professor of mathematics at Brno. According to his assistant and successor Karel Čupr, Lerch's lecture had not changed since Fribourg. Technical University engineering students found them more suitable for mathematics students and protested publicly.

The foundation of the second Czech Technical University brought changes to the organization of the Union of Czech Mathematicians and Physicists (*Jednota*). In 1913, a section of the *Jednota* was officially founded in Brno. In fact, lectures and meetings had begun to be organized in Brno immediately after the establishment of the Czech Technical University. During the years 1901–1911, about 55 lectures were held there. Auditors were mostly recruited among Brno secondary school mathematics teachers ([**Košťál 1967**], p. 18–21.). But contact with the German Mathematical Society in Brno were minimal and no mathematician or physicist from the Czech Technical University ever gave a lecture in the Hamel's seminar. Indeed, the mathematical life in Brno before WWI, such as it was, seemed completely split along the lines of national and linguistic communities. We were not able to find a single instance of mathematical cooperation not only between a German and a Czech university at an official level (such as exchange of professors, common lectures and so on) but even between two individual members of these universities!

4. Mathematics in Brno during and after WWI

4.1. The War. From 1908 on, Hamel had tried to come back to Germany mostly for personal reason due to his marriage in Cologne in 1909. He first tried to obtain a chair in Hannover but it was given to Caratheodory. Hamel eventually obtained his first position in Germany in Aachen in 1912. Hamel's departure from Brno deprived mathematical life in the German Technical University from a major source of energy and the outbreak of WWI gave a deathblow to it. The activity of the German Mathematical Society stopped immediately. Both professors of mathematics—Lothar Schrutka (1881–1945) and Heinrich Tietze (1880–1964)—enlisted in the army, Tietze as officer on the front and Schrutka as teacher at a secondary military school in Vienna. From the German Technical University, 9 professors, 10 privatdocents, 40 assistants, and 34 others employees enlisted ([**Haussner 1924**], p. 33–34). All mathematical lectures and lessons were delivered by the professor of descriptive geometry Emil Waelsch (1863–1927). Both drafted, his assistants Wilhelm Schmid (1888–1963) and Rudolf Kreutzinger (1886–1959) were replaced by students. Waelsch's assistants were taken prisoners in Russia and were not able to get back to Brno until 1920 and 1921 respectively—which created problems for the teaching of descriptive geometry after the war, at a time when the number of students increased. During the war, however, student enrollment at the German technical University decreased from 950 to roughly 100–200.

Surprisingly, courses at the Czech Technical University hardly suffered in the first years of the war, since all professors of mathematics and descriptive geometry (Zahradník, Lerch, and Pelíšek) were old men at the time and therefore not drafted. After Zahradník's death in 1916, his successor, Jan Vojtěch (1879–1953), was appointed, but only in 1918. Of 177 teachers and employees of the Czech Technical University in Brno, 64 persons enlisted ([**Franěk 1969**], vol. 1, p. 103). The number of regular students at the school decreased from 571 in the academic year 1913–1914, to 254 in 1914–1915, and finally to 90 students in 1916–1917.¹² The remaining students of these empty years were often younger than before the war and belonged to the classes not yet called to the army. In 1913–1914, students under 19 years old represented 30% of the total enrollment, while in 1914–1915 this number had risen to 49%. In 1917, some soldiers were allowed to come back to universities, and student enrollment rose to 368, many of whom were students having passed their first-year examinations in 1914–15, now enrolled in their second year after having spent up to two years in the ranks.

At both German and Czech Technical Universities, buildings were turned into military hospitals and the damages this caused complicated the restart of teaching in 1918 ([**Šišma 2002**], p. 146–148). Both universities saw their financial situation deteriorate and one can estimate that the dotation for the German Technical University as well as for the Czech Technical University had been reduced by 40% during the war ([**Haussner 1924**], p.31 [**Franěk 1969**], p.104).

4.2. Czechoslovakia and the German Technical University. The Czechoslovakian declaration of independence on 29 October 1918 brought important changes to university life where, as we have seen, German institutions played such important role. The situation of the German communities within the borders of the Czech lands became unstable. While the German deputies from Bohemia and Moravia petitioned in Vienna for the annexation of German-populated regions by Germany (north Bohemia and Silesia) or by Austria (south Bohemia and south Moravia), the Czechoslovakian Government started to organize the military occupation of the lands as early as November 1918. In March 1919, a violent repression against the Sudete Germans temporarily settled the question and the German inhabitants were forcedly incorporated to the Czechoslovakian state [**Bělina et al. 1993**].

In 1919, Czech nationalists spent a lot of energy to prove that though the German Technical University had been favored by Vienna during the Austrian domination, the new Czechoslovak Government had not decided to destroy it in retaliation. In Parliament, the deputy František Mareš (1857–1942), a professor of physiology and philosophy, who became rector of the Charles University in 1920–21, mentioned that while the budget of the German Technical University was 707,000 crowns at the time of the Austrian Empire, it had risen to 1,753,000 crowns by 1919.¹³ In fact, the extreme fluctuation of exchange rates and inflation during and after the war of course make difficult to appreciate the significance of these

¹²Lists of students for academic years 1913–1914 to 1919–1920. Archives of the Czech Technical University, Brno.

¹³*Czechoslovakian Parliament Debates*, 34th Session, 27 February 1919.

numbers.¹⁴ The estimated inflation index rate for the crown in the Czech lands in October 1918 was 1876 (taking 100 in 1914 as basis) ([Šedivý 2001], p. 245).

In Prague as well as in Brno, German university leaders lost their superior positions and often uttered alarming declarations. As Germans boycotted the Czechoslovak National Assembly of 1919, the Czech majority had a free hand to exert a tighter control on German higher education. In the first election held in 1920, there were 72 German deputies elected (that is, deputies whose party's name included the word "German") out of 300. When the organization of higher education in the new state was discussed in the Czechoslovakian Parliament, a German professor from Charles University in Prague expressed his helplessness: "We are in an appalling situation: a great part of our university will be thrown out onto the street. The situation is distressing and is best expressed by the words: homeless, without means, without rights."¹⁵ In the parliamentary debate, on 27 February 1919, the physician Srdínko—who had meanwhile been elected as deputy—contested the honesty of such declarations and petitioned for a redistribution of public resources among Czech and German universities. He recalled that even before the war texts had been published by foreign authors condemning the disproportion of means between universities. He quoted an article published in the *Revue générale* from 1911 stating that "a brutal and obvious fact appears from this amount of documents. It is the extraordinary disproportion existing between the credits attributed to the German University and those attributed to the Czech University, if one takes into account the respective populations."¹⁶

Perhaps understandably, professors at the German Technical University in Brno felt much looser connections with the city and the new state than their Czech colleagues. Many had been trained in other Austrian universities. Before WWI they had seen little difference between Brno, Graz, or Innsbruck; for one thing, Brno was certainly more attractive than distant Lemberg or Czernovitz. But in 1919, the German Technical University in Brno now was an institution whose main constituency was a minority that had been deprived of much of its prior political and cultural power. Even if demobilization caused student enrollment to rise in 1920–1921 to twice its prewar value, the future of the Technical University was unclear. Indeed the existence of two German technical universities in Prague and in Brno for

¹⁴One reason for hyperinflation was that in 1914, in order to make the war popular, the Austro-Hungarian government had decided to pay double the price for the main articles of necessity (such as grain, cattle, and horses): an enormous amount of 30 billions crowns had been printed by the Austro-Hungarian bank, resulting in huge inflation ([Rašín 1923], p. 23).

¹⁵Quoted from *Czechoslovakian Parliament Debates*, 34th Session, 27 February 1919.

¹⁶"Un fait brutal, évident, se dégage de cette masse des documents. C'est l'extraordinaire disproportion, qui existe entre les crédits affectés à l'université allemande et ceux qui sont affectés à l'Université tchèque, si l'on tient compte de leur population respective" The quotation is on pp.102-103 of the paper *La question des langues et l'enseignement universitaire en Bohême* (The language problem and university in Bohemia) by F.de Visscher published in the *Revue Générale* in 1911 in two parts (Vol 1 : 812-827, and Vol 2: 101-113). The paper offers an interesting insight about the academic life in the Czech lands at the eve of First World War, mostly in Prague, though several comments are made on the Moravian situation. The paper contains a lot of figures for both the Czech and the German universities. Interestingly, de Visscher writes : *Forced to turn towards foreign countries, Czechs have feared the domination of the German genius. They are looking for supports of a scientific tradition and useful sympathies with less invading sources, more distant and quier.* (Contraints de s'adresser à l'étranger, les Tchèques ont craint la domination du génie allemand. Ils cherchent à des sources moins envahissantes, plus lointaines et plus calmes, le soutien d'une tradition scientifique et d'utiles sympathies) (p.109).

the German minority became a political issue when some drew attention to the fact that in the new state three million Germans enjoyed the same number of technical universities as nine million Czechs and Slovaks. The Czechoslovakian government however chose to avoid direct confrontation with the Germans on this point and maintained the *status quo*. In March 1919, the professors of the Brno German Technical University took an oath of loyalty to the Czechoslovakian Republic.¹⁷

At the time, Austrian universities worried about the fate of their “sister-institutions” in the Czech lands. On 14 December 1918, at a meeting of Austrian universities in Vienna, the possibility of a common future was discussed. Fearing that it would be impossible to pursue their activity in the Czech capital, the representatives of the Prague German University suggested to move their university to a town in Bohemia where the Germans would form the majority.¹⁸ The Association of Austrian German Engineers made up more specific plans and suggested to transfer the Prague German Technical University to Ústí nad Labem in northern Bohemia and officially transform the German Technical University in Brno into a branch of the Vienna Technical University.¹⁹ On 23 December 1918 the Academic Senate of the Prague German University declared that if German border regions of Czechoslovakia were reunited with Germany or Austria, the university should also be transferred. This declaration infuriated Mareš: “What does that mean? It means that the Academic Senate of the German University in Prague does not acknowledge the legality of this country [and acts] as if the German University in Prague was not a property of the Czechoslovakian Republic.”²⁰

In this delicate political context, the local mathematical community at the Brno German Technical University suffered many changes. In 1919, mathematics professor Tietze left for Erlangen and Fanta stopped giving his weekly lectures on actuarial mathematics in Brno. It is possible that other docents from Vienna who had worked at the Brno Technical University before the war also stopped commuting.

The difficulties faced by the German Technical University in filling the position left open by Tietze’s departure are illustrative of the complexity of the new situation. The position of mathematics professor indeed remained vacant until 1923, when Karl Mayr (1884–1940) was appointed. Eight mathematicians applied when the position was first opened in 1919. Johann Radon was selected, but unfortunately, he accepted an offer at Hamburg University. The second candidate for the professorship in Brno, Roland Weitzenböck, had already been appointed at the Prague German Technical University. Negotiations went on in 1921 until the rector of the Brno Technical University suggested the name of Horst von Sanden who was a professor of mathematics working at the Clausthal Mining Academy. But Sanden rejected the offer, and so did Robert König (1885–1979) and Georg Prange (1885–1941) in 1922. Eventually Karl Mayr, an assistant of mathematics in Brno before

¹⁷Archive of the German Technical University in Brno, Moravian Provincial Archive, B34, 416.

¹⁸*Czechoslovakian Parliament Debates*, 34th Session, 27 February 1919.

¹⁹*Lidové Noviny*, Brno, 19 January 1919.

²⁰“Co to znamená? To znamená, že akademický senát německé university v Praze neuznal právní stav tohoto státu, poněvadž připouští možnost, že by ta universita mohla být přenesena do státu cizího, že tedy německá universita v Praze není, abych tak řekl, majetkem nebo statkem Československé republiky” (quoted from *Czechoslovakian Parliament Debates*, 34th Session, 27 February 1919).

WWI, habilitated at the Vienna Technical University and became Tietze's successor in Brno. But this lasted only a short time. Dissatisfied with his position of extraordinary professor in Brno, Mayr left for the Technical University in Graz in 1924, even if he was offered no promotion ([Šišma 2002], pp. 216–219). Then, the year after Mayr had left, the other mathematics professor of the Brno German Technical University, Schrutka, also quit to accept a professorship in Vienna. Negotiations to find proper replacements to Mayr and Schrutka were again long and difficult. In 1925, Rudolf Weyrich (1894–1971), who had been a student at Breslau University and a privatdocent in Marburg, was appointed extraordinary professor and in 1927, Lothar Koschmieder (1890–1974) came to Brno as an ordinary professor ([Šišma 2002], pp. 220–225).

A further delaying factor in the negotiations was the fact that the Czechoslovak government often rejected foreign candidates. But graduates from the German universities in Prague or Brno were not in sufficient number to compete with Austrians and Germans. Only in exceptional cases (e.g., when a native expert could not be found) would the Ministry of Education accept to consider a foreign candidate. Salary was another issue, as the Czechoslovakian crown's exchange rate was very low. As Josef Krames (1897–1986), who was professor of descriptive geometry at the German Technical University from 1927 to 1929, wrote the Czechoslovakian Ministry of Education in 1927, the salary offered to him in Brno was that of an assistant in Vienna.²¹ He nevertheless accepted the position in the hope that the status of extraordinary professor in Brno would help him get the professorship of descriptive geometry at the Graz Technical University. This indeed happened in 1929.

In these circumstances, the German Technical University in Brno hardly was in position to maintain its previous level of mathematical activities. At the German Mathematical Society, only fundamental mathematical lectures for engineers were now delivered, but no more special lectures by privatdocents of mathematics. Mathematics professors kept their contacts with Austrian and German mathematicians and did all they could to get positions at foreign universities. They regularly partook in the meetings of the DMV and even organized such a meeting in Prague in 1929. But if we know of individual contacts between Czech and German mathematicians in Prague, such contacts seem to have remained extremely rare in Brno.

4.3. The Foundation of Masaryk University. Rather than confronting the German community by reducing the number of institutions of higher education they were used to benefit, the Czechoslovakian government rather chose to develop new ones for their nationals, and especially the Czechs. For the government, the support of existing institutions and the creation of new ones was a question of vital necessity, especially in the south of the country where the traditional road to Vienna for Moravian and Slovak students was now barred. In Brno, this political resolve translated in the enlargement of the Czech Technical University and the establishment of the brand new Masaryk University.

In the Czech Technical University, a Faculty of Architecture was opened in 1919, after many years of requests. When peace came back, the number of regular students at the Czech Technical University jumped to more than 900. Technical

²¹Josef Krames's personal file, Ministry of Education, Czech National Archive, Prague.

universities were moreover opened to women after the war.²² Due to the presence of the older classes, the age distribution changed slightly: in 1914 only 14% of the students were over 24 years old; in 1919, they were 28%. Many of them were therefore in need of rapid qualification to start working as technicians for the new state. For this task, mathematics did not seem a priority. Indeed, despite the enlargement of the Technical University, the number of professors of mathematics, descriptive geometry, and mechanics stayed stable after WWI. After the number theorist Lerch whose lectures at the Technical University had often been criticized for their high abstraction was appointed at Masaryk University (see below), Karel Čupr (1883–1956) was appointed as his successor in 1923. Descriptive geometry was taught by Pelíšek until 1928. To second him, in 1924 came the only Slovak mathematics professor at a Czechoslovakian university, Jur Hronec (1881–1959).²³

Even before the collapse of the monarchy, Czech and Slovak leaders had already agreed on the necessity of creating two new universities, in Brno and in Bratislava. No later than during the second session of the Czechoslovakian Parliament on 15 November, 1918, a group of deputies proposed the creation of a university in Brno with three faculties : of philosophy, law and medicine. Masaryk University was founded on 28 January, 1919 with four faculties, the philosophical faculty being divided in two faculties—philosophy and science—as had been done at the Prague universities. Before the beginning of the first academic year, professors were appointed in all faculties. Lectures started at the Faculty of Law and at the Faculty of Medicine in the academic year 1919–1920. The faculties of Science and Philosophy started their activities the following year. The main difficulty faced by the new university was the absence of rooms and buildings. All the faculties started their teaching in temporary conditions. Rooms were rented from the Technical University or other organizations. The first mathematical lectures by Lerch were held in a room where he had already taught his students of the Technical University. A huge plan for developing an academic quarter near the Technical University was not realized, and in fact only one building was built—the Faculty of Law.²⁴

In the new Faculty of Science, there were two professorships for mathematics and two for physics. Lerch taught mathematical analysis and algebra, while

²²Before 1919, women were only allowed to study at technical universities as extraordinary students. Although there were several attempts to make technical universities open to women before the war, the Austrian Ministry of education was always opposed to the idea. Women had been admitted as full students from 1897 on in the Empire universities but only in the Philosophy section. A tiny number of women were subsequently admitted to follow different studies. An interesting example of a woman scientist is the chemist Lise Meitner (1878–1968) who was admitted to university in 1901 and received a PhD in Physics in 1905. On this question, the interested reader may refer to Waltraud Heindl und Marina Tichy, *Durch Erkenntnis zu Freiheit und Glück : Frauen an der Universität Wien ab 1897*, Schriftenreihe des Universitätsarchivs, Universität Wien, Bd 5, Wien, 1990

²³Hronec worked in Brno until 1938. The fact that he was the only Slovak in this position illustrates the disparity between the two founding components of the multinational state. In 1939 Hronec was appointed professor and rector at the first Slovak Technical University in Košice (see [Franěk 1969], pp. 233–240).

²⁴Today the archives of the university are located in this building. The other faculties were located in different parts of the town. The situation has not significantly changed until today. A larger campus is now under construction.

Ladislav Seifert (1883–1956) was appointed professor of geometry.²⁵ Frèchet’s correspondent Hostinský was, as we have seen, appointed professor of theoretical physics while he was a privatdocent at the Prague University. Finally, Bedřich Macků (1879–1929), who had been extraordinary professor of physics at the Czech Technical University in Brno, was appointed professor of experimental physics. Those were distinguished recruits. As we have seen, Hostinský started his career with a mathematical thesis on Lie spherical geometry defended in 1906. The year he spent in Paris (1908–1909) was decisive for his scientific evolution and allowed him to prepare his habilitation which he defended on 16 November, 1911 under the title “On Geometric methods in the theory of functions.” Back in Prague Hostinský worked in secondary education, before he was called as privatdocent to the Prague University in 1912. In parallel with his secondary teaching, he began to give conferences on several topics of advanced mathematical (analytic function theory, differential geometry of curves and surfaces, differential equations, geometric applications of differential equations, etc.). Not enlisted during the war (most probably for health reasons), Hostinský stayed in Prague where he was first acquainted with probability theory [Havlová et al. 2005]. Some months before his appointment in Brno, during the academic year 1919–1920, Hostinský taught Volterra’s integral equation theory and their applications [Beránek 1984].

Seifert had also been privatdocent in Prague before he was appointed professor of geometry in Brno. In the academic year 1907–1908 he had studied in Strasbourg and Göttingen. An author of works devoted to algebraic geometry and differential geometry, he specialized in surfaces of third order and quadrics of revolution. In differential geometry he studied the properties of some curves and surfaces and interpreted his results in descriptive geometry. An heir to the Czech geometers of the second half of 19th century, he remained foreign to the main trends of 20th-century geometry.²⁶ Seifert passed a double habilitation in 1920, at the Prague University in the field of mathematics and at the Technical University in descriptive and synthetic geometry. One may think that Masaryk University’s urgent need for a professor of geometry account for this choice.

As we have seen, the creation of Masaryk University allowed Lerch to transfer and finally to lecture mathematicians, mostly secondary school teachers. In 1920, Lerch shared with Hostinský the teaching of all mathematical and physical lectures and officially launched the mathematics department. Unfortunately, as he had become ill, Lerch restricted his activities mostly to teaching. His main contribution may have been to notice the talent of his student Otakar Borůvka (1899–1995) whom he managed to appoint as first assistant of mathematics at Masaryk University. Borůvka later became the leader of Brno mathematics in the second half of 20th century.²⁷

²⁵Ladislav Seifert is not to be confuse with the German topologist Herbert Seifert (1907–1996).

²⁶On Seifert, see [Hrdličková 2001]. About the Czech geometric school, see [Folta 1996].

²⁷Borůvka was to become involved in a tight Czech-French collaboration. Borůvka’s famous Spanning Tree algorithms were presented in Paris in 1926–1927 where he went to work with Élie Cartan following Hostinský’s and Čech’s suggestion. The archives of the Masaryk university in Brno contain several letters sent by Borůvka to Hostinský from Paris where he described how he had been welcomed by the Cartans. See [Nesetril 2001].

After Lerch's death in August 1922, Seifert became the head of the department and Eduard Čech (1893–1960) was appointed in 1923, only one year after his habilitation. Čech had studied mathematics and descriptive geometry at the Prague University from 1912. He was drafted during the war, but worked as a clerk in the rear for the next three years, able to read mathematical books and learn foreign languages (Italian, German, and Russian). After the war he started to teach in a secondary school in Prague. He defended a thesis on differential geometry in 1920 and spent the academic year 1921–1922 in Torino with Guido Fubini. A geometer, he nonetheless was asked to teach mathematical analysis and algebra at Brno. After he was appointed full professor in 1928, Čech developed, as is well known, a strong interest for topology, a field in which he became one of the world's experts in the 1930s.²⁸

Among the efforts made by Czech mathematicians at Masaryk University to develop research in Brno, let us underscore Hostinský's zealous direction of the library commission of the Faculty of Science where he managed to obtain the inheritance of several personal book collections. Hostinský also devoted much energy to the founding of a journal *Spisy vydávané přírodovědeckou fakultou Masarykovy university* (Papers presented to the Faculty of Science of the Masaryk University). He managed to conclude exchange agreements with hundreds of scientific institutions worldwide—a decisive point for the new university as, due to the low value of Czech crown, foreign journals were unaffordable. Thanks to the exchange, in 1937 the department of mathematics bought only six journals, and received around one hundred more through exchanges [Čech 1937]. Moreover, the creation of this new journal became a good opportunity not only for the faculty members but also for all Czechoslovak scientists to disseminate their results. In 1925, about fifty issues had been published as separate numbers.

5. A Franco-Czech mathematical axis : Dreams and Reality

Once Masaryk University was running, it appeared necessary for it to participate in international scientific programs and collaborations. More than an academic need, asserting a Czechoslovakian presence on the international scientific scene was an important political symbol. In the mathematical science, a very interesting example of efforts to establish scientific relationships congenial to the new political map of Europe were, as mentioned above, the ties knitted between Fréchet in Strasbourg and Hostinský in Brno.

5.1. French Mathematics in Strasbourg. To analyze this interaction, one must take into account French eagerness to create and tighten its relationship with Central and Eastern European countries. Czechoslovakian leaders, such as Masaryk and Beneš, had strong personal and intellectual connections with France. An active propaganda was organized by the French authorities to convince the Czechoslovakian government and local administrations (universities, schools, cultural associations) of the importance of cultural and educational relations. Both of the universities recently established in Brno and Bratislava were the objects of special attention. After the war, it seemed clear that victorious France—and not Germany, its traditional competitor in this domain—would attract most advanced students from Czechoslovakia. While French officials betrayed their amazing self-confidence

²⁸On Čech, see [Gray 1994], [Katětov & Simon 1993].

on that subject, German academics expressed their fear of French cultural hegemony. As early as in 1918, the historian and librarian Ferdinand Rieser (1874-1944) wrote that, if the Germans do not provide the necessary efforts to attract foreign students, “afterwards, the Russian and the Japanese will go to French universities which are not worse than German ones and will go back home and spread the French spirit.”²⁹

Soon, a rhetorical comparison between Czechoslovakia and Alsace appeared. Both regions had just been rescued from what was perceived as the jaws of German imperialism. This idea influenced French cooperation with the new state in the political, economical, cultural, and, in particular, academic domains. Almost immediately after the war, the takeover of Strasbourg University and its reconstruction along French standards appeared as urgent tasks for the government³⁰.

Contrary to French authorities’ first hunch, Strasbourg’s strong ties with German culture was not an obvious advantage in the eyes of foreign students from Central Europe. Sent to Transylvania (a part of the Austro-Hungarian Empire assigned to Rumania) to attract students to Strasbourg in June 1920, a French diplomat reported the feeling of a local academic officials:

For many people here, even among the most francophile, the Alsatian remains a hybrid being, as German as he is French, and who, condemned to be on one of the two sides, prefers France in the end where life is sweeter. I felt that [they feared] that the air one breathes in Strasbourg is not ‘absolutely pure French air’. You will certainly recognize therein the effect of the Fritz propaganda on the mind of these brave Transylvanians.³¹

Nevertheless, the French Government hoped to attract many foreign students from Eastern and Central Europe to Strasbourg and wanted the university to become a showcase of French science’s successes ([**Olivier-Utard 2005**], p. 154–155). The following letter from a French deputy to the administrator of Alsace, dated March 1919, is a good illustration.

You know better than anyone the considerable importance that the Germans had given to this university and the coquettishness they showed to make of it one of the most brilliant, if not the most brilliant, of the whole empire. [...] When they left, they predicted that in less than three years France would have destroyed their work. How can we respond to this challenge?³²

²⁹*Akademische Rundschau*, vol. 5, 1918, p. 322.

³⁰About the history of the Strasbourg University as stakes of power between France and Germany, the interested reader may refer to the beautiful book [**Crawford & Olf-Nathan 2005**].

³¹*Pour beaucoup de gens ici, et des plus francophiles, l’Alsacien demeure un être hybride, autant allemand que français, et qui, réduit à vivre dans l’un des deux camps, préfère en définitive celui de la France où on lui fait la vie plus douce. J’ai senti [qu’ils craignent] qu’on ne respire pas à Strasbourg ‘un air de France absolument pur’. Vous reconnaissez là, bien certainement, Monsieur le Doyen, les effets de la propagande boche sur l’esprit de ces braves transylvains.* Letter from the military attaché in Bucarest to the Dean of Strasbourg University, 6 June 1920. Archives of the French Ministry of Foreign Affairs, Paris. File *France*, 43, F° 128.

³²*Vous savez mieux que personne l’importance considérable que les allemands avaient donnée à cette université et la coquetterie qu’ils ont mise à en faire une des plus brillantes sinon la plus brillante de l’empire. Vous avez certainement vu aussi qu’ils ont prédit en partant qu’en moins de 3 ans la France aurait saboté leur œuvre. Comment relever ce défi?.* Deputy Maurice Maunoury

Every efforts were therefore geared towards turning Strasbourg into a first rank French university. Many French scientists active in the organization of wartime scientific mobilization (especially at the Direction of Inventions for National Defense where Émile Borel played a major role) were chosen to form the new faculty of Strasbourg University. Among them, several ones understood the importance of developing statistics. During the imperial period, Strasbourg had already, with Wilhelm Lexis and Georg Friedrich Knapp, been a major center for the discipline.³³ Among the pedagogical initiatives where the teaching of statistics was of prime importance, there was the creation of the Trade Study Institute (*Institut d'études commerciales*) where original teaching was given by the sociologist Maurice Halbwachs (1877–1945) and by Fréchet.

5.2. Fréchet in Strasbourg and International Relations. Before being appointed to Strasbourg as professor of higher analysis in 1919, Fréchet had been professor at Poitiers University between 1910 and 1914. He was already famous in the international mathematical community due to his outstanding thesis on the topology of functional spaces from 1906, where he offered a theoretical framework for Volterra's functions of lines (see [Taylor 1982]). In addition to his mathematical fame, Fréchet had another asset : he was a polyglot. A singular fact of his life is the energy he devoted to the promotion of Esperanto, a language in which he wrote several mathematical papers³⁴. His knowledge of English was excellent at a time when this was unusual. During the war, he had served as an interpreter for the British army. And he knew German well, a useful asset in Strasbourg.

In these circumstances, it seems understandable that Fréchet would take the initiative of writing his Czech colleagues to receive recent information about the state of mathematics in their country.³⁵ As we have seen, the letter he wrote on 29 June, 1919, was finally answered by Hostinský in October. On 12 November, 1919, Fréchet answered Hostinský's letter. He suggested that French abstracts to Czech publications be collected in a single journal. With a tinge of paternalism, Fréchet cautiously wrote that he had thought “interesting to let [Hostinský] know the opinion of a stranger who wishes nothing but good things to Czech scientists and mathematical science,” and that collecting these abstracts would show that there was a large part “due to Czech science in what has usually been attributed to the Germans in Austria.”

In a letter dated 1 June, 1920, written on paper with official letterhead of the organization committee of the sixth International Congress of Mathematicians (ICM, to be held in Strasbourg in September of that year), Fréchet enclosed a little brochure titled “The Teaching of Mathematics at Strasbourg University” printed to attract students to the Alsatian capital and asked Hostinský to publish it in a Czech journal. According to Fréchet, the Strasbourg University needed to stimulate

to Alexandre Millerand, 5 April 1919. Archives of the Bas Rhin department, Strasbourg. File 1045W165.

³³On the development of mathematical statistics in France, see R. Catellier and L. Mazliak, *Borel, IHP and the Beginning of Mathematical Statistics in France after WWI*, To appear in *Revue d'Histoire des Mathématiques*. See also M. Armatte : *Maurice Fréchet statisticien, enquêteur, et agitateur public*. *Rev. Hist. Math.* 7, 1, 7-65 (2001).

³⁴See for example Fréchet's own comments about the international conference for the use of Esperanto in science (*Bull. Amer. Math. Soc.* Volume 32, 1, 41–42 (1926))

³⁵On Fréchet's effort in order to organize mathematics in Strasbourg and, especially, the international dimension of this effort, see also [Siegmond-Schultze 2005], p. 187–189.

influxes of students so that propaganda was needed for a little while³⁶. In his answer from the end of June, Hostinský wrote that he hoped to meet Fréchet for the first time at the ICM in Strasbourg. The Czech delegation to the Congress was important (11 members of a total of about 200 persons). After the congress, the mathematician Bohumil Bydžovský (1880–1969), who was one of the most active members of the Czech mathematical society and had been appointed the same year as tenure professor at Prague University, reported :

the contact with mathematicians from the Strasbourg University, our main partner in the West, was particularly cordial. The interest they showed for our scientific, educational and social situation seems to warrant that reciprocal exchanges will be pursued, obviously for the prosperity of our science.³⁷

At the Strasbourg Congress where he indeed met Fréchet, Hostinský gave two talks, one on differential geometry and the other on mechanics. During the spring of 1920, Hostinský had sent Picard the translation of his paper published in 1917 in the *Proceedings of the Czech Academy* [**Hostinský 1917**] and devoted to a new solution of the Buffon needle problem. This classical problem of Geometrical probability deals with the calculation of the probability for a needle thrown over a parquet to intersect one of the regularly spaced grooves. This probability is shown to be equal to $\frac{2\ell}{\pi d}$ where ℓ is the length of the needle and d the distance between two grooves.

The classical treatment of this problem is based on an hypothesis of uniform distribution of the (random) angle between the needle and the grooves' direction and of the (random) distance between the middle of the needle and the closest groove. An usual justification for these distributions is the virtual assumption that the parquet be infinite in every directions and the needle may be thrown anywhere. Hostinský's work basic idea was to criticize these physically absurd assumptions and to try obtaining the result within the reasonable framework of a finitely extended parquet. To achieve this, he made use of Poincaré's arbitrary function method and showed that for any arbitrarily given distribution of the aforementioned random angle and distance, if the number of grooves goes to infinity, the value of the desired probability equals $\frac{2\ell}{\pi d}$.

As soon as he received Hostinský's translation on 18 April 1920, Picard suggested to publish it in the *Bulletin des sciences mathématiques* [**Hostinský 1920**]. In a letter to Hostinský dated 7 November, 1920, Fréchet wrote that he had carefully read this slightly modified version of the 1917 paper. From this reading, Fréchet drew the motivation for writing his very first article in the field of probability theory³⁸. At the same time, the interaction was for Hostinský the occasion of making a first step in the direction of the ergodic principle to which he would later devote important studies.

³⁶As consequence of this sending, we only were able to find a brief publication of the list of lectures offered in Strasbourg university in the journal *Časopis pro pěstování matematiky* during Fall 1920. Compared to the rather luxurious presentation of the brochure sent by Fréchet, the Czech advertisement seems a bit dull.

³⁷“Zvláště srdečný byl styk s matematiky štrasburské university, naší nejbližší spřátelené vysoké školy na západě. Zájem, který jevíli o naše poměry vědecké, studijní i jiné veřejné, zdá se býti zárukou, že ve vzájemných stycích bude pokračováno, jistě ve prospěch naší vědy.” ([**Bydžovský 1921**], pp. 46–47).

³⁸M.Fréchet : *Remarque sur les probabilités continues*, Bull.Sci.Math., 45, 1921, 87–88

Hostinský's contacts with French mathematicians went beyond his correspondence with Fréchet. In a note submitted to the Paris Academy of Sciences in 1928, Hostinský introduced an elementary version of the ergodic theorem for a Markov chain with continuous state³⁹. Hostinský's work on this topic came before the spectacular development of the 1930s in the hands of Andrei N. Kolmogorov and others. Upon reading Hostinský's article, Jacques Hadamard plunged into probability for the first and only time of his life, a period referred to as his "ergodic spring" which ended up at the Bologne ICM in September 1928 where Hadamard gave a talk on the ergodic principle ([Bru 2003], pp.158-159). Between February and June 1928, Hostinský and Hadamard exchanged many letters, published several notes responding to one another and also met during Hadamard's journey to Czechoslovakia in May. From this moment, Hostinský acquired real international prestige and in the 1930s his little school in Brno became an active research center on Markovian phenomena.

Fréchet had of course been drawn to probability theory for wider reasons than his nascent correspondence with Hostinský. For one thing, Fréchet's joint lectures at the Trade Institute certainly played a greater role⁴⁰. However, we suspect that his continuing correspondence with his Czech colleague was a major incentive for Fréchet's interest in Markov chains, since in his letters Hostinský discussed all new developments on this topic. Fréchet himself wrote after Hostinský's death

Among his various topics of research, [Hostinský] drew my attention to the theory of probabilities in chain. Hence, it is thanks to him that I could write the second volume of my studies on modern probability theory, and in the book I frequently used his ingenious methods.⁴¹

Hostinský's glorious year 1928 marked however a kind of stopping for the relations between Brno and Strasbourg. Fréchet returned that same year to Paris to help Borel with the new Institut Henri Poincaré. This was the institution where Hostinský's international contacts were to develop in the 1930s. In their numerous exchanges during these years, Fréchet and Hostinský tackled many aspects of Markov chains with discrete and continuous states. This tends to prove that Hostinský and Fréchet had become the main reader for each other on the topic during the 1930s. In 1936, Fréchet advised Doeblin to write to Hostinský and this resulted in a short but interesting correspondence studied in [Mazliak 2007]. Hostinský was moreover eager to lean on the prestige acquired from his French relations for further development of the international contacts of the mathematics in

³⁹B.Hostinský: *Sur les probabilités relatives aux transformations répétées*, CRAS, 186, 59–61, 1928.

⁴⁰The lectures were subsequently published as the book [Fréchet & Halbwachs 1924]. In the preface, the authors explain how the dialogue between a mathematician and a sociologist proved fruitful.

⁴¹"Parmi toutes ses recherches si variées, il avait su m'intéresser à la théorie des probabilités en chaîne. De sorte que c'est grâce à lui que j'ai été amené à écrire sur ce sujet le second livre de mes recherches sur la théorie moderne des probabilités, ouvrage où j'ai eu à invoquer ses ingénieuses méthodes en de nombreux passages." (Fréchet to the Rector of Masaryk university, 5 May 1951, Hostinský's personal file, Archive of Masaryk University, Brno). Fréchet alludes to the book published in 1937 as part of Borel's *Traité du calcul des probabilités et de ses applications* (Gauthier-Villars, Paris) under the title *Méthodes des fonctions arbitraires. Théorie des événements en chaîne dans le cas d'un nombre fini d'états possibles*.

Brno. During the 1930s, his activity was particularly intense to federate the mathematical research of the Central and East European countries. He was one of the main organizers of the first two congresses of mathematicians from Slavic countries (in Warsaw in 1929, Prague in 1934). His personal archive in Brno testifies to his energy, especially for inviting the Soviet mathematicians : this was a failure due to the dramatization of the Stalin era in USSR. Until its annihilation in the dramatic events of the German annexation of 1939 and World War II, the Brno school of mathematical physics was therefore one of the most successful mathematical centers in the new postwar Central Europe.

6. Conclusion

The foundation of Czechoslovakia in 1918 appears a good example of an attempt of reorganization of Europe after the end of World War I. In places where there was a tense cohabitation of several national communities (as in many parts of the collapsed Austro-Hungarian empire), it was necessary to choose a form of organization allowing the coexistence of several traditions. This was in particular the case with the organization of educational system.

When one studies the local case of Brno, the capital of Moravia on the border of Austria, it is vital to understand how the difficult contacts between the Czech majority and the large German minority had influenced the whole process of edification of education institutions between ca 1880 and 1930. Though the German minority lost its domination in 1918, the institutions were still much influenced by the culture that had prevailed before the war, though there were several attempts to create a new interest towards the countries of the victorious side. Despite political changes unsolved contradictions, antagonisms and absence of communication continued to exist between the two communities. Moreover, French eagerness to become the most important support of the young Czechoslovakian state rose some misunderstanding and carefulness from the Czechoslovakian side. As an example, we looked at some aspects of the academic relations between France and Czechoslovakia. After some promising beginnings illustrated by a proclaimed proximity between Strasbourg, Prague and Brno, the relation had in fact never the extension the French had dreamt about.

Considering the case of mathematics, we tried to expose how the discipline was mainly active in the German Technical University before the war with the creation of a local German Mathematical Society when Hamel was given a position of full professor of Mechanics, and in the new Masaryk University after the war where we emphasized the important role of Hostinský and his international contacts, especially with France. Hostinský thus succeeded in federating a very active kernel of research in mathematical physics in Brno, mainly studying the structure of Markovian processes. This was an important occasion for Brno to become the center of an international network of mathematicians, including in particular scientists from Eastern Europe. An important aspect of this network was the efficient system of scientific publications organized by Hostinský. But all this did not survive to the German occupation and the Second World War, followed by the new regime of alliance with Soviet Union during the Cold War. For several years on, Brno mathematicians' looks became turned towards the east of the iron curtain.

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